

not free from trepidation, an instance where we think Mr. Wells has been caught napping. When the favorite blinds are closed and the sphere starts on its journey, he describes the curious effects of the absence of external gravitational attraction—all the material occupants of the sphere slowly collect in the interior by their *mutual* attractions, and there is no “up” or “down.” Then a window is opened towards the moon and promptly everything gravitates towards the moon—the direction towards the moon is *downwards*, though the attraction is slight. Surely this is a slip? With bodies moving freely in space only the *differential* attraction would be felt, and this would be negligible compared with the mutual attraction of the occupants of the sphere. Even if it were not so small it could not act in the manner specified; its tendency would be to *separate* bodies (as in the case of the tides), not to bring them together, and thus a man near a “floor” would not fall towards it but would rise from it. But Mr. Wells is so wonderfully careful in general that we make this criticism with far less confidence than we should have felt in another case; we have an uneasy feeling that he may dexterously transfer the supposed slip from his account to ours.

A POPULAR WORK ON FISHES.

The Story of Fish Life. By W. P. Pycraft. Pp. 210. (London: G. Newnes, Ltd., 1901.) Price 1s.

THIS book, which is one of the shilling series published by Messrs. Newnes, is divided into fourteen chapters and illustrated by seventeen text figures and a frontispiece. Its contents are generally interesting and well arranged, but there is recognisable throughout its pages a leaning towards the racy and sensationally attractive, as, for example, in the method of dealing with the habits of the sword-fish and the feeding process generally. The mode of treatment is mainly physiological, the consideration of function preponderating over that of structure and development. Migration and “transformation” are in turn dealt with, the latter with a commendable emphasis of the part played in Nature’s operations by “substitution.”

Much attention is given to the skeletal organs and especially the teeth, and the author loses no opportunity of forcing home the lesson of the tooth-scale homology. The effort, however, is somewhat weakened by the assertion that, while fish-scales are (p. 29) typically “horny plates,” they are (p. 31) in “the most primitive form” bony. The statement that the bony fin supports (p. 68) have been formed by the fusion of clusters of original “hair-like” rays is equally misleading; and in dealing with the terms expressive of types of tails, the author falls into the prevailing fallacy of applying them to the fins and not to the fishes themselves. In declaring that in the typical fish the dorsal fins are two in number, the fact that there may be three dorsals is ignored, it being implied (p. 58) that the codfish has but two. And error is further evident in the assertion that the adipose fin is “without supporting structures.”

The mode of description is in places none too well chosen. Such declarations as that the “beauty” of the Cestracion’s teeth is “entirely an accidental feature” and that in deglutition the “touch” of the swallowed food

“signals” through the closed-up gullet to the nerves, are to be deprecated in a book of this kind; while a greater regard for the facts of morphology would have been in places acceptable, as in the mode of treatment of the types of so-called external gills. The existence of these in the Teleostei is denied; but while we excuse the non-allusion to those said to occur in the loaches, we consider it strange that, on a later page, the author incidentally refers to the African fishes obtained by Budgett, in which they have been proved to be abundantly present, without mentioning them. Nor is he more fortunate with his treatment of the internal gills and respiration, for nowhere in the book are the numerical limitations of the former even stated, nor is there mention of the “breathing valves,” to which attention has but recently been redrawn.

In the aforementioned and other equally important matters, which, under the scheme adopted, should have found recognition in the book, the author is not up to date, as, for example, in his declaration that nothing is known of the chimæroid development. In the organological sections of the book sufficient use is never made of extremes of modification, such, for example, as those which render clear the real differences in the composition of the gills of the bony fishes and elasmobranchs, expressed in the terms pectino- and cysto-branchiæ. Particularly is this the case with the alleged distinctions between the two chief groups into which the author would divide the fishes as a whole. He gives, for this purpose, a classification, which is neither that of the author to whom he ascribes it nor an accurate statement of Huxley’s observations, upon which it is based. “Hyostylic” and “autostylic” are the terms which denote the distinctive characters of his two great “branches,” but the former is wrongly construed. Neither the author of the present work nor he whom he names acknowledge the condition termed by Huxley the *amphistylic*; and the author himself does not even mention the Notidanidæ, of which, alone among living fishes, it is diagnostic. These and the Port Jackson shark (which exhibits a marvellously transitional condition of the parts in question, for which alone a distinctive term might well be introduced) are not typically hyostylic. They are lower than those fishes which are. Without recognition of them and the amphistylic state Huxley’s system cannot be adequately set forth. So important is this morphologically that advantage might be gained by associating the Notidanidæ with at least the Hydodonts and Pleuracanth among fossil forms, in a distinct order, in preference to the retention of the name “Ichthyotomi” for the latter alone. In the present case, in the non-recognition of these amphistylic forms and the absence of all reference to the hyomandibular element, the essential point is lost. In the spread of scientific knowledge, the more elementary that imparted the more precise should be the diagnoses employed.

There is a closing chapter on palæichthyology, of a very cursory type.

The present book is the second which the author has contributed to the series to which it belongs. The first, on “The Story of Bird Life,” was in every way a success and as a popular treatise exemplary. Comparison shows that the striking differences between the two books are due to the fact that with the first of them alone the

author's knowledge was based on a thoroughly practical acquaintance with the animals with which he dealt. While we fully admit the difficulties of the task of compilation of the second, the present work, we regret we cannot recommend it with the confidence extended to its predecessor.

THE PROBLEM OF TRUTH.

Das Wahrheitsproblem unter Kulturphilosophischem Gesichtspunkt—Eine philosophische Skizze. Von Dr. Hermann Leser. Pp. iv + 90. (Leipzig: Dürr'sche Buchhandlung, 1901.) Price 2 marks.

THE author of this work is not a "jesting Pilate." His book contains rather a thorough discussion of the problem of truth in some of its widest issues. The standpoint is essentially Kantian, but with a difference. The question raised in the "Critique of Pure Reason" was, How are pure mathematical science and pure natural science possible?—in other words, on what principles can it be maintained that the ordinary experience of man *quâ* intellectual gives him truth? Dr. Leser contends that the problem should be stated more widely in the form, How is truth in general possible, the truth of all the higher spiritual life of man, of religion, morality, art, as well as science? And it is claimed for the work before us that, as compared with Kant's, it is more concrete in treatment, that it goes nearer the heart of things, and that while including and remaining true to Kant's results it gives a more satisfactory basis for future development.

The first part deals with a deepened idea of experience, for which the author employs the term "Kulturhistorische Erfahrung." By this he appears to mean the higher spiritual experience of the race as exhibited by history in such things as institutions, codes, systems, standards of judgment. In the development of this view, naturalism is subjected to some telling criticism. Finding nothing anywhere but "bare results, finer complications of natural process," naturalism would exclude all facts which do not coincide with, or cannot be reduced to, the facts of ordinary natural science. In dealing with the institutions in which the spiritual life has found expression, naturalism pays regard only to the crystallised form, not to the spiritual potencies which have been at work. It attaches exclusive value to what is genetically original, and denies, for example, the characteristic distinction between good and bad by deriving it from the distinction between the useful and the harmful. Such a psychogenetic method can never get beyond brutal actuality to norms or standards of judgment; it is only a transcendental method (the author maintains) which can disclose the organisation of "rulers and subjects," for example, the subordination of what is first in time to what is ideally fundamental.

The latter part of the book is concerned with the problem of truth from the new standpoint thus gained. It is pointed out that Kant replaced the old objectivity (supposed to exist entirely out of relation to a subject) by transcendental-subjectivity, than which no more secure objectivity can be found. This means that truth is to be found by "turning to one's own depths"; but if it is

to be depths and not shallows, to be *transcendental*-subjectivity in the right sense and not bare subjectivity in the wrong sense, we must have recourse to "Kulturhistorische Erfahrung." It is only as experience is writ thus large that the potencies at work can be discovered. One of the chief of these potencies is personality. Personality Dr. Leser opposes on the one hand to bare individualism, and on the other to the equally bare disregard of the personal factor. The great man is neither the heaven-sent hero dear to the soul of a Carlyle nor the hollow pipe through which the "Zeitgeist" pours such music as it listeth. Or, as our author puts the latter point: "The man is more than the product of his time; planting himself on the original truth which he has found within him, it is he who first makes a new height attainable."

The work is not unnecessarily stiff. At times, perhaps, a little vagueness is felt, and the technical terms, as usual, can rarely be translated by single words. But his readers will doubtless welcome another book from this careful and suggestive writer. R. G. N.

OUR BOOK SHELF.

Catalogue of the Lepidoptera Phalaenae in the British Museum. Vol. iii. "Catalogue of the Arctiadae (Arctianae) and Agaristidae in the Collection of the British Museum." By Sir George F. Hampson, Bart. Pp. xix + 690. Plates xxxvi-liv. (London: Printed by Order of the Trustees, 1901.)

FOR a long time after the study of exotic butterflies began to grow popular in England, that of moths continued to be much neglected, though moths, taken as a whole, are equally beautiful and far more numerous than the butterflies. But after the pathway had been smoothed by the useful, though much abused, catalogue of Walker, the works of Moore, Butler and Druce, and especially by Kirby's "Catalogue of Lepidoptera Heterocera: Sphingidae and Bombycidae," published in 1892, the Trustees of the British Museum decided to issue a general descriptive catalogue of the moths of the world, which bids fair to become one of the largest and most profusely illustrated of all their publications on natural history.

The work was entrusted to Sir George F. Hampson and three thick volumes have already been issued. According to the table of families in vol. i. the author admits fifty-two, which, deducting seven for the butterflies, leaves forty-five for the moths, of which only the first three are monographed in the portion of the work already published, so that little more than the fringe of the subject has yet been touched. Of course some of these families only include a few species; but, on the other hand, there are several very much more extensive than the Arctiadae, which alone fill up the greater part of vols. ii. and iii. The plates are published separately, and can be bought separately, a useful arrangement which will enable students who require an additional copy of the book for working purposes to purchase it without the additional and unnecessary cost of a duplicate set of coloured plates. In addition to these coloured plates, drawn by Mr. Horace Knight and chromolithographed by West, Newman and Co., the book is further illustrated by text-illustrations of types of genera, showing both the pattern and the most important generic details, and of these compound figures there are no less than 294 in vol. iii., in which 946 Arctianae and 225 Agaristidae are described, of which a considerable number are new species. At the end of the volume is a short list of species which the author has not been able to identify from the published descriptions. Should further information respecting these be forthcoming, we presume that